



**Hawker, Graeme and Flower, J. D. and Bell, Keith (2019) Zoning for local heat and energy efficiency strategies. In: Scottish Renewables Low Carbon Heat Conference 2019, 2019-04-30 - 2019-04-30. ,**

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# Zoning in LHEES

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# LHEES summary

- 15-20 year period
- Authority-wide strategy for energy efficiency and heat decarbonisation
- Designate zones that set out the most appropriate options to help in phasing delivery programmes
- Socio-economic assessment of solutions
  - Net improvement in social welfare



Not just about costs and emissions

# Spatial variance

## ■ Technical

- Network availability/capacity
- Housing density
- Demand level / density
- Housing efficiency
- Technology characteristics
- Supply-side evolution / access

## ■ Economic

- Technology costs
- Access to capital
- Ownership models
- Commercial actors

## ■ Social/behavioural

- Demographics
- Fuel poverty
- Rebound effects
- Acceptance



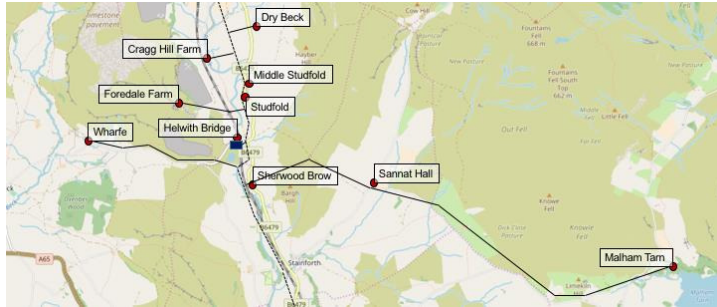
**Zonal definition & prioritisation**

# Examining future local archetypes

**Rural**

Disaggregate UK energy system into exemplar archetypes

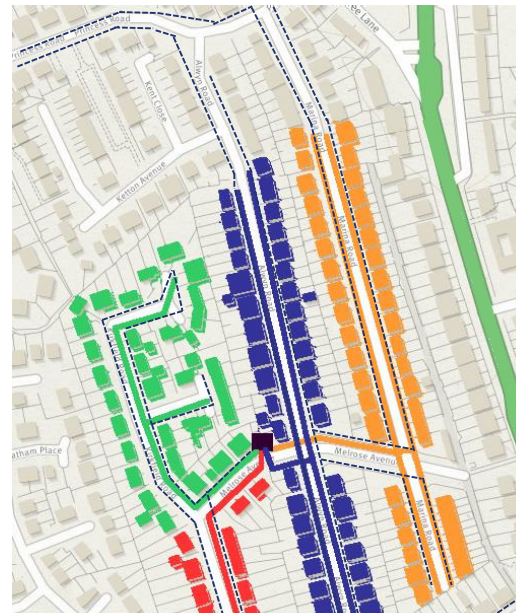
**Urban**



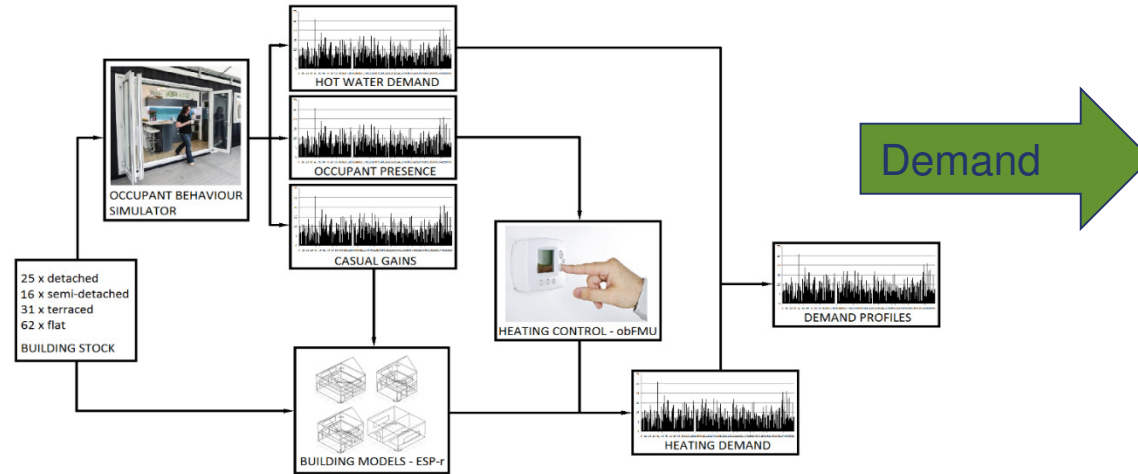
Modelling conducted within UKERC  
Theme 3: “**Energy Systems at Multiple Scales**”

Sub-theme: “**Modelling spatial and temporal diversity**”

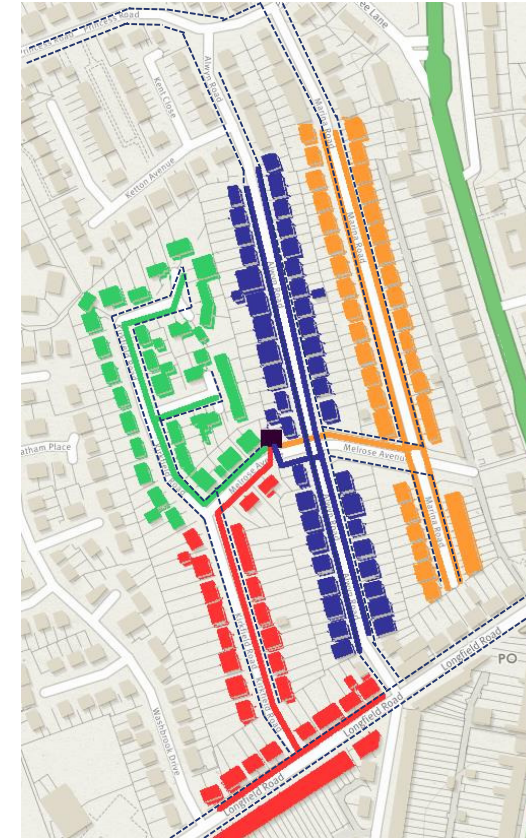
**Suburban**



# Demand and technology modelling

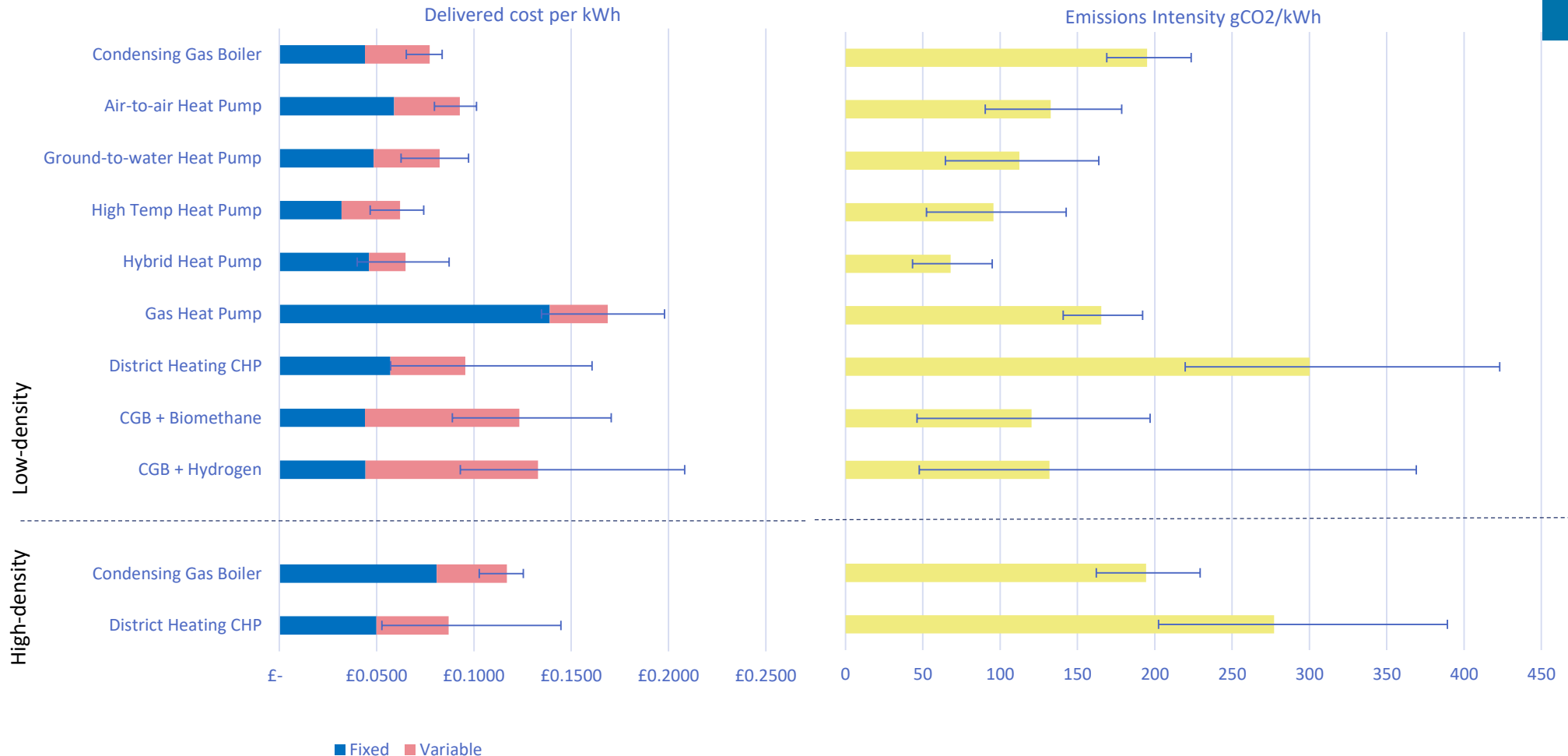


Supply



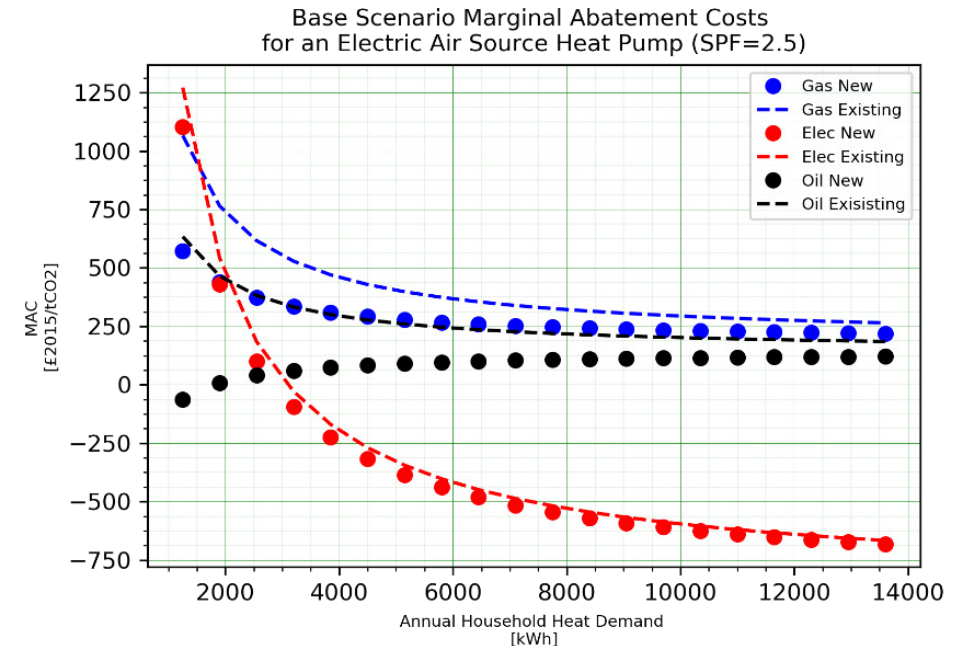
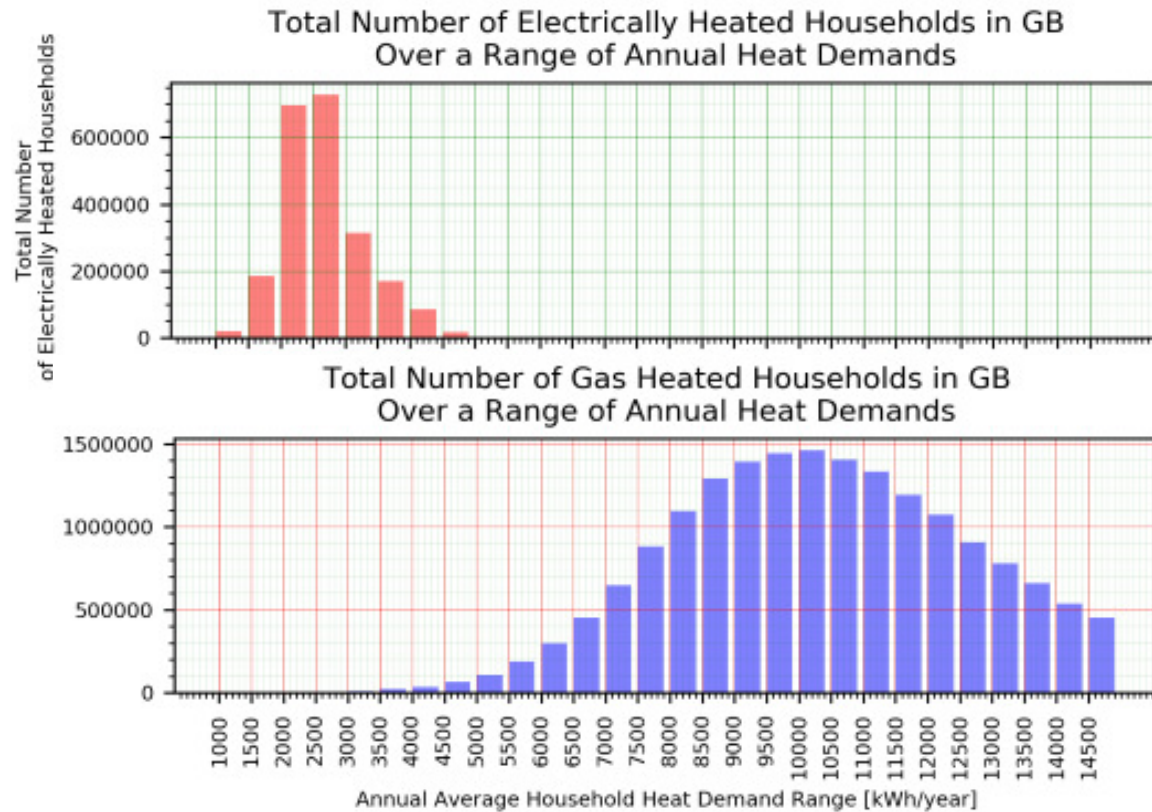


# Evidence for costs and abatement



O. Broad, G. Hawker, P. Dodds, (2019) *Decarbonising the UK residential sector: the dependence of national abatement on flexible and local views of the future*

# The impact of demand rebound



Sources: [1] England, Northern Ireland, Scotland and Wales 2011 Census: Office for National Statistics ; National Records of Scotland ; Northern Ireland Statistics and Research Agency (2017): 2011 Census aggregate data. UK Data Service (Edition: February 2017). DOI: <http://dx.doi.org/10.5257/census/aggregate-2011-2>; [2] UK GOV, Sub-national electricity and gas consumption data 2015

*University of Strathclyde IPPI blog October 2018 - Reducing emissions from heating our homes – does one size fit all?*

J. Flower, G. Hawker, K. Bell, (2019) *Heterogeneity of UK Residential Heat Demand and its Impact on the Value Case for Heat Pumps*



# Near-term LHEES goals

- Achievable policies and business models which incrementally decarbonise real-world systems at a local scale
- Within the context of uncertain evolution of regional/national-scale systems
  - ‘Bridging’ solutions and long-term sustainable options
  - Unclear coordination for non-incremental change
- A clear picture of the likely technical performance and efficiency of low-carbon options
- Breakdown of discrete responsibilities between homeowners/housing associations, local authorities, network owners/operators and national bodies
- Danger of near-term small-scale efforts undermining the business case for more transformative change?
  - A need to consider the first, middle and last thousand homes